

A FRUITING OCCURRENCE OF *Bryum algens* Card. IN EAST ANTARCTICA

by

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Only about a dozen species of mosses have been recorded from the large eastern sector of Antarctica, the bryophytic flora of which is very much poorer than that of the western Palmer Peninsula (and its adjacent islands) where at least 67 species occur—*teste* W. C. Steere, 1961. By far the largest genus in the whole antarctic region is *Bryum* with eleven currently recognized species; five of these are represented in East Antarctica, but up to 1974 no fruiting example had ever been found in this region, although *Bryum* fruits are well known from the Palmer Peninsula of West Antarctica.

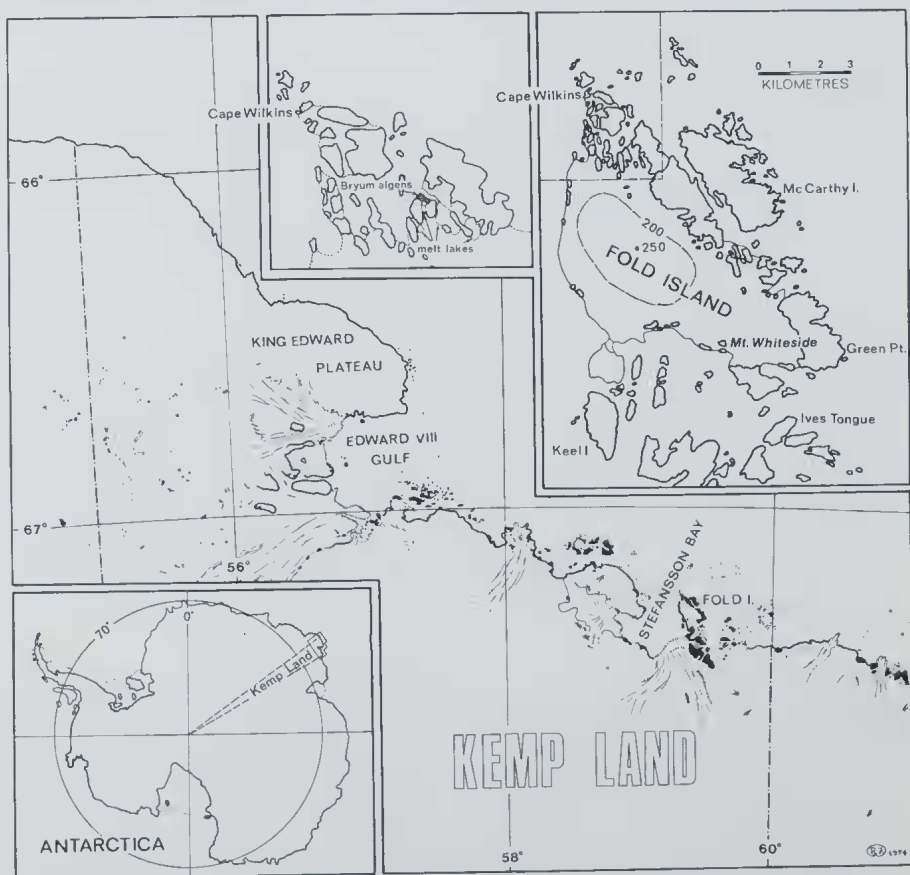


Fig. 1.—Map showing position of Fold Island and location of fruiting *Bryum algens* Card.

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Muelleria 3 (2): 112–116 (1975).

During February 1974 abundant and excellent fruits were discovered on a *Bryum* colony inhabiting rocks on Fold Island, Kemp Land. Fold Island is relatively large and lies to the east of Stefansson Bay, Kemp Land, at 67° 18'S, 59° 23'E. The island is capped by an ice dome which rises to a height of 250 m. Large expanses of rock are exposed along the north and eastern sides, with smaller outcroppings along the southern and western parts of the island.

One of us, (R. B. F.) visited this island as a member of the summer 1973-74 Australian National Antarctic Research Expedition (A.N.A.R.E.) survey team. John Manning and Geoff Robinson were already on the island when he arrived and drew his attention to a strange plant that they had found growing in a small valley on the northern side. It proved to be a moss in fruit, and collections were made during a further visit to the area. This *Bryum* occurred on the western side of a northerly-trending valley. A melt-water stream, fed from a large melt lake, was flowing along the bottom of the valley. The plants covered an area of about 100 m square, and this area was also fed by trickling melt-water from a small melt lake in the valley above. Most cushions of moss were sterile; but around the northern side of boulders, where maximum heat from the sun would be concentrated, abundant fruiting material was present.

In most capsules examined, the inner teeth of the peristome had completely disappeared, giving the impression of a single outer peristome. The inner series would appear to be rapidly



Fig. 2.—*Bryum algens* Card. showing capsules

evanescent, and can only be observed immediately after the operculum falls away. Such a developmental feature may be associated with fructification at the extreme limit of the plants tolerance.

This moss is conspecific with populations at and in the vicinity of Mawson (\pm 135 km eastward), occurrences of which had been published under the name *Bryum antarcticum* Hook. f. & Wils. in R. B. Filson's *The Lichens and Mosses of Mac. Robertson Land* pp. 147–148, t. 40 (1966). The identification at that time was based on comparable material from Mac. Robertson Land examined and reported on by the late bryological doyen E. B. Bartram of Pennsylvania (U.S.A.). Recently Dr. Stanley W. Greene (in Birmingham, U.K.), an authority on Antarctic mosses, has inspected a sample of the fruiting material from Fold Island and he comments thus (by letter, 17. v. 1974):

“I can confirm that it is *Bryum algens* Card. There is no ambiguity about the determination, as the characteristic bracts are present with the excurrent nerve. . . . Dixon and Bartram confused this plant with *Bryum antarcticum*, a totally different species which is morphologically completely distinct from *B. algens* and, indeed, from all other *Bryums* that I know . . . The plant [*B. algens*] fruits very well along the west coast of the peninsula [i. e. Palmer] as far as Marguerite Bay, but I have never seen it in this state . . . in any other collections which I have examined. Your specimen is, therefore, very noteworthy.”

Apparently Dixon and Bartram are not the only ones to have been confused by these two Antarctic species of *Bryum*. Under the original description of *B. algens*, (type from Granite Harbour in Victoria Land), in *Nat. Antarct. Exped.* 5 (1907), J. Cardot compares it with his own two previously listed species, *B. gerlachei* and *B. inconnexum*, but makes no mention of any affinities with the earliest-described species of the region, *B. antarcticum* Hook. f. & Wils. (1847)—type from Cockburn Island in Cockburn Sound, far southern Chile. H. T. Clifford in “New Records for Antarctic Mosses,” *Aust. J. Sci.* 20: 115 (1957) states that he has seen specimens named by Cardot and that *B. algens* is conspecific with *B. antarcticum*. William C. Steere, in his “Preliminary Review of the Bryophytes of Antarctica”, *Nat. Acad. Sci. (Nat. Res. Council)* Publ. 839: 25–26 (1961), accepts both species as distinct, but synonymizes three other of Cardot's binomials (*B. austropolare*, *B. gerlachei* and *B. inconnexum*) under *B. algens*. Finally, Stanley W. Greene in “Studies in Antarctic Bryology I—A basic check list for mosses”, *Rev. Bryol.* 36: 135 (1968), accepts *B. inconnexum* Card. (and its variety *tomentosum* Card.) as distinct from both *B. algens* and *B. antarcticum*. According to Steere, *B. algens* and *B. antarcticum* are co-extensive on the Danco Coast of

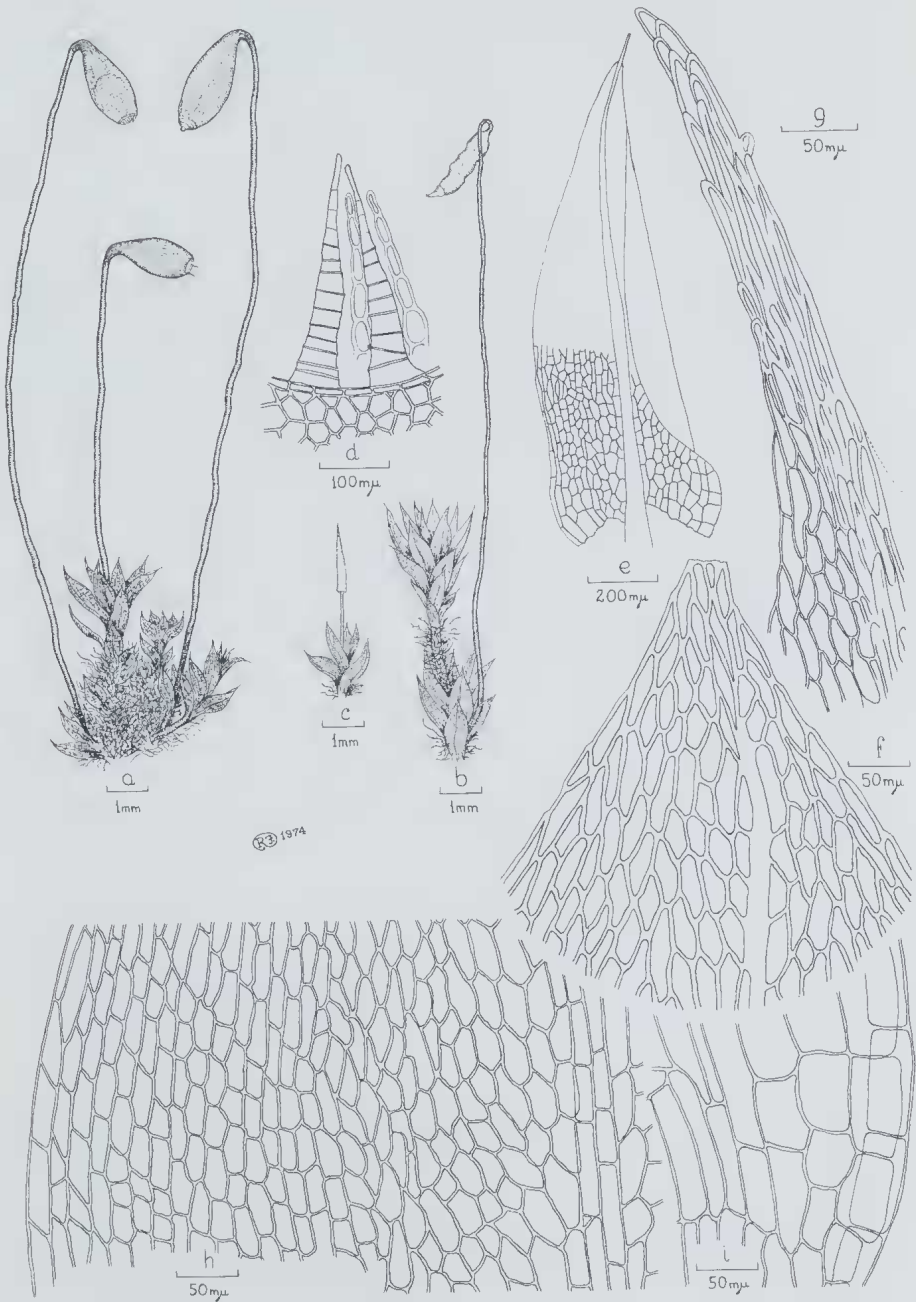


Fig. 3.—*Bryum algens* Card. a—Mature capsules 'in situ', centre capsule has damaged peristome teeth; b—young capsule; c—calyptra 'in situ'; d—(Part of) peristome showing persistent outer and fragile disintegrating inner teeth; e—leaf; f—areolation in the upper part of the leaf; g—tip of leaf showing excurrent nerve; h & i—areolation in the middle and lower parts of the leaf. (all drawings from R. Filson 14996.)

Palmer Peninsula and at McMurdo Strait (or Sound), Victoria Land; otherwise *B. antarcticum* is listed from a wide range of localities—in Melchior Archipelago, Marie Byrd Land, Adelie Land, Queen Mary Land, Emperor Wilhelm II Land and Mac. Robertson Land.

Certainly, there seems little to choose between W. Fitch's original figure of *B. antarcticum* (type), in *Flora Antarctica* 2: t. 153 fig. vi (1847), and J. Cardot's better drawings of *B. algens* (type) the most obvious vegetative differences between these two species seem to be the excurrent nerve and much smaller more numerous cells in upper leaves of *B. algens*—nerves of *B. antarcticum* do not extend into their leaf-apices. In deference to Dr. Greene's modern researches on Antarctic mosses, we now prefer to adopt the name *Bryum algens* for the only species of the genus currently known from Mac.Robertson Land and Kemp Land. It is obvious that all collections from the Antarctic continent (including Palmer Peninsula), hitherto assigned to *B. antarcticum*, need to be critically re-examined—probably most (or perhaps all) will prove referable to the widespread *B. algens*. An excellent photograph (by N. J. Collins) of the large, cushion-forming growth of *B. algens* from Signy Island, South Orkneys, appears in a paper on water relations of mosses by C. H. Gimingham & R. I. L. Smith, *Br. Antarct. Surv. Bull.* 25: 9 (1971).

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